

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: Murphy, Brian R.  
Collins, Peter L.  
Whitehead, Stephen S.  
Bukreyev, Alexander A.  
Juhasz, Katalin
- (ii) TITLE OF INVENTION: PRODUCTION OF ATTENUATED RESPIRATORY  
SYNCYTIAL VIRUS VACCINES FROM CLONED NUCLEOTIDE SEQUENCES
- (iii) NUMBER OF SEQUENCES: 14
- (iv) CORRESPONDENCE ADDRESS:
  - (A) ADDRESSEE: Townsend and Townsend and Crew LLP
  - (B) STREET: Two Embarcadero Center, 8th Floor
  - (C) CITY: San Francisco
  - (D) STATE: CA
  - (E) COUNTRY: USA
  - (F) ZIP: 94111-3834
- (v) COMPUTER READABLE FORM:
  - (A) MEDIUM TYPE: Floppy disk
  - (B) COMPUTER: IBM PC compatible
  - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
  - (D) SOFTWARE: PatentIn Release #1.0, Version #1.25
- (vi) CURRENT APPLICATION DATA:
  - (A) APPLICATION NUMBER: US
  - (B) FILING DATE: 15-JUL-1997
  - (C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA:
  - (A) APPLICATION NUMBER: US 60/047,634
  - (B) FILING DATE: 23-MAY-1997
- (vii) PRIOR APPLICATION DATA:
  - (A) APPLICATION NUMBER: US 60/046,141
  - (B) FILING DATE: 09-MAY-1997
- (vii) PRIOR APPLICATION DATA:
  - (A) APPLICATION NUMBER: US 60/021,773
  - (B) FILING DATE: 15-JUL-1996
- (viii) ATTORNEY/AGENT INFORMATION:
  - (A) NAME: Parmelee, Steven W.
  - (B) REGISTRATION NUMBER: 31,990
  - (C) REFERENCE/DOCKET NUMBER: 17634-000510
- (ix) TELECOMMUNICATION INFORMATION:
  - (A) TELEPHONE: 206-467-9600
  - (B) TELEFAX: 415-576-0300

(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 15223 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

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CAATCAAATT GAATGGCATT GTGTTTGTGC ATGTTATTAC AAGTAGTGAT ATTTGCCCTA	300
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TTATAATAGA	ATGGAGCAAG	CATGTAAGAA	AGTGCAAGTA	CTGTTCTCTA	GTTAATAAAT	14400
GTATGTTAAT	AGTAAAATAT	CATGCTCAAG	ATGATATTGA	TTTCAAATTA	GACAATATAA	14460
CTATATTAAA	AACTTATGTA	TGCTTAGGCA	GTAAGTTAAA	GGGATCGGAG	GTTTACTTAG	14520
TCCTTACAAT	AGGTCCTGCG	AATATATTCC	CAGTATTTAA	TGTAGTACAA	AATGCTAAAT	14580
TGATACTATC	AAGAACCAAA	AATTTTCATCA	TGCCTAAGAA	AGCTGATAAA	GAGTCTATTG	14640

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ATGCAAATAT TAAAAGTTTG ATACCCCTTTC TTTGTTACCC TATAACAAAA AAAGGAATTA 14700  
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AATGGTTCAA TCATGTTTTA AATTTTCAGAT CAACAGAACT AAACATAAC CATTTATATA 14880  
TGGTAGAATC TACATATCCT TACCTAAGTG AATTGTTAAA CAGCTTGACA ACCAATGAAC 14940  
TTAAAAAACT GATTAAAATC ACAGGTAGTC TGTATACAA CTTTCATAAT GAATAATGAA 15000  
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ATCATTTTAA TCTTGAGGA ATAAATTTAA ACCCTAATCT AATTGGTTTA TATGTGTATT 15180  
AACTAAATTA CGAGATATTA GTTTTTGACA CTTTTTTTCT CGT 15223

## (2) INFORMATION FOR SEQ ID NO:2:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 15225 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: cDNA

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

ACGCGAAAAA ATGCGTACTA CAAACTTGCA CATTTCGAAA AAATGGGGCA AATAAGAATT 60  
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TGATAAAGGT TAGATTACAA AATTTATTTG ACAATGACGA AGTAGCATTG TTAAAAATAA 180  
CATGTTATAC TGACAAATTA ATTCTTCTGA CCAATGCATT AGCCAAAGCA GCAATACATA 240  
CAATTAAATT AAACGGTATA GTTTTTTATAC ATGTTATAAC AAGCAGTGAA GTGTGCCCTG 300  
ATAACAACAT TG TAGTAAAA TCTAACTTTA CAACAATGCC AATATTACAA AACGGAGGAT 360  
ACATATGGGA ATTGATTGAG TTGACACACT GCTCTCAATT AAACGGTCTA ATGGATGATA 420  
ATTGTGAAAT CAAATTTTCT AAAAGACTAA GTGACTCAGT AATGACTAAT TATATGAATC 480  
AAATATCTGA TTTACTTGGG CTTGATCTCA ATTCATGAAT TATGTTTAGT CTAAC TCAAT 540  
AGACATGTGT TTATTACCAT TTTAGTTAAT ATAAAACTC ATCAAAGGGA AATGGGGCAA 600  
ATAAACTCAC CTAATCAATC AAACATGAG CACTACAAAT GACAACACTA CTATGCAAAG 660  
ATTAATGATC ACGGACATGA GACCCCTGTC GATGGATTCA ATAATAACAT CTCTACCAA 720  
AGAAATCATC ACACACAAAT TCATATACTT GATAAACAAT GAATGTATTG TAAGAAAAC T 780  
TGATGAAAGA CAAGCTACAT TTACATTCTT AGTCAATTAT GAGATGAAGC TACTGCACAA 840  
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CATGCCATATA TTTATCAATC ATGGCGGGT TCTAGAATGT ATTGGCATTG AGCCTACAAA 960  
ACACACTCCT ATAATATACA AATATGACCT CAACCCGTAA ATTCCAACAA AAAAAACCAA 1020  
CCCAACCAAA CCAAGCTATT CCTCAAACAA CAATGCTCAA TAGTTAAGAA GGAGCTAATC 1080

CGTTTTAGTA ATTAAAAATA AAAGTAAAGC CAATAACATA AATTGGGGCA AATACAAAGA 1140  
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GCAAATACAC TATTCAACGT AGTACAGGAG ATAATATTGA CACTCCCAAT TATGATGTGC 1260  
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CAGAAATACA AGTCAATATT GAGATAGAAT CTAGAAAATC CTACAAAAAA ATGCTAAAAG 1560  
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CAGTAATTAG GAGGGCAAAC AATGTCTTAA AAAATGAAAT AAAACGCTAC AAGGGTCTCA 1740  
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GAATCTTTCG AGGATTGTTT ATGAATGCCT ATGGTTCAGG GCAAGTAATG CTAAGATGGG 1920  
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TGATGATTTT TGATCAGTGA TCAACTCACT CAGCAATCAA CAACATCAAT AAAACAGACA 3120  
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ATACACAGCA GCTGTTTCAGT ACAATGTTCT AGAAAAAGAT GATGATCCTG CATCACTAAC 3360  
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GACATCAAAA AGAGTAATAA TACCAACCTA TCTAAGACCA ATTAGTGTCA AAAACAAGGA 3780  
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AACATCAAC TTTGCAAATC CATCTGTAAA ACAATACCAA GCAACAAACC AAAGAAGAAA 5280

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ACACAAACAC	CCACAGCATC	CGAGCCCTCT	ACATCAAATT	CCACCCAAAA	TACCCAATCA	5580
CATGCTTAGT	TATTCAAAAA	CTACATCTTA	GCAGAAAACC	GTGACCTATC	AAGCAAGAAC	5640
GAAATTAAAC	CTGGGGCAAA	TAACCATGGA	GCTGCTGATC	CACAGGTTAA	GTGCAATCTT	5700
CCTAACTCTT	GCTATTAATG	CATTGTACCT	CACCTCAAGT	CAGAACATAA	CTGAGGAGTT	5760
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GTATACCAGT	GTCATAACAA	TAGAATTAAG	TAATATAAAA	GAAACCAAAT	GCAATGGAAC	5880
TGACACTAAA	GTAAAACTTA	TAAAACAAGA	ATTAGATAAG	TATAAGAATG	CAGTGACAGA	5940
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ACTACATAAT	GTAAATACTG	GCAAATCTAC	TACAAATATT	ATGATAACTA	CAATTATTAT	7260
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TCATGCTACC	CACACAAC TA	AGCTAGATCC	TTAACTCATA	GTTACATAAA	AACCTCAAGT	7560
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TCGCGAAGAA	ATCCTTGTA	ATTTGAGATT	AGAGGTCATT	GCTTGAATGG	TAGAAGATGT	7680
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CATAATGAAG	GCTTCTACAT	AATAAAAGAA	GTAGAGGGAT	TTATTATGTC	TTTAATTCTA	9540
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ATGTTTACAA TGGACATTAA ATATACAAC AGCACTATAG CCAGTGGTAT AATTATAGAA 12240  
AAATATAATG TTAATAGTTT AACTCGTGGT GAAAGAGGAC CTACTAAGCC ATGGGTAGGT 12300  
TCATCTACGC AGGAGAAAAA AACAATGCCA GTGTACAATA GACAAGTTTT AACCAAAAAG 12360  
CAAAGAGACC AAATAGATTT ATTAGCAAAA TTAGACTGGG TATATGCATC CATAGACAAC 12420  
AAAGATGAAT TCATGGAAGA ACTGAGTACT GGAACACTTG GACTGTCATA TGAAAAAGCC 12480  
AAAAAGTTGT TTCCACAATA TCTAAGTGTC AATTATTTAC ACCGTTTAAC AGTCAGTAGT 12540  
AGACCATGTG AATTCCCTGC ATCAATACCA GCTTATAGAA CAACAAATTA TCATTTTCGAT 12600  
ACTAGTCCTA TCAATCATGT ATTAACAGAA AAGTATGGAG ATGAAGATAT CGACATTGTG 12660  
TTTCAAAATT GCATAAGTTT TGGTCTTAGC CTGATGTCGG TTGTGGAACA ATTCACAAAC 12720  
ATATGTCCTA ATAGAATTAT TCTCATACCG AAGCTGAATG AGATACATTT GATGAAACCT 12780  
CCTATATTTA CAGGAGATGT TGATATCATC AAGTTGAAGC AAGTGATACA AAAACAGCAT 12840  
ATGTTTCCTAC CAGATAAAAT AAGTTTAACC CAATATGTAG AATTATTCCT AAGTAACAAA 12900  
GCACTTAAAT CTGGATCTAA CATCAATTCT AATTTAATAT TAGTACATAA AATGTCTGAT 12960  
TATTTTCATA ATGCTTATAT TTTAAGTACT AATTTAGCTG GACATTGGAT TCTAATTATT 13020  
CAACTTATGA AAGATTCAAA AGGTATTTTT GAAAAAGATT GGGGAGAGGG GTACATAACT 13080  
GATCATATGT TCATTAATTT GAATGTTTTT TTTAATGCTT ATAAGACTTA TTTGCTATGT 13140  
TTTCATAAAG GTTATGGTAA AGCAAAATTA GAATGTGATA TGAACACTTC AGATCTTCCT 13200  
TGTGTTTTGG AGTTAATAGA CAGTAGCTAC TGGAAATCTA TGTCTAAAGT TTTCTTAGAA 13260  
CAAAAAGTCA TAAAATACAT AGTCAATCAA GACACAAGTT TGCATAGAAT AAAAGGCTGT 13320  
CACAGTTTAA AGTTGTGGTT TTTAAAACGC CTTAATAATG CTAAATTTAC CGTATGCCCT 13380  
TGGGTTGTTA ACATAGATTA TCACCCAACA CATATGAAAG CTATATTATC TTACATAGAT 13440  
TTAGTTAGAA TGGGGTTAAT AAATGTAGAT AAATTAACCA TTAAAAATAA AAACAAATTC 13500  
AATGATGAAT TTTACACATC AAATCTCTTT TACATTAGTT ATAACTTTTT AGACAACACT 13560  
CATTTGCTAA CAAAACAAAT AAGAATTGCT AATTCAGAAT TAGAAGATAA TTATAACAAA 13620  
CTATATCACC CAACCCAGAA AACTTTAGAA AATATATCAT TAATTCCTGT TAAAAGTAAT 13680

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AATAGTAACA AACCTAAATT TTGTATAAGT GGAAATACCG AATCTATAAT GATGTCAACA 13740  
 TTCTCTAATA AAATGCATAT TAAATCTTCC ACTGTTACCA CAAGATTCAA TTATAGCAAA 13800  
 CAAGACTTGT ACAATTTATT TCCAAATGTT GTGATAGACA GGATTATAGA TCATTTCAGGT 13860  
 AATACAGCAA AATCTAACCA ACTTTACATC ACCACTTCAC ATCAGACATC TTTAGTAAGG 13920  
 AATAGTGCAT CACTTTATTG CATGCTTCCT TGGCATCATG TCAATAGATT TAACTTTGTA 13980  
 TTTAGTTCCA CAGGATGCAA GATCAGTATA GAGTATATTT TAAAAGATCT TAAGATTAAG 14040  
 GACCCAGTT GTATAGCATT CATAGGTGAA GGAGCTGGTA ACTTATTATT ACGTACGGTA 14100  
 GTAGAACTTC ATCCAGACAT AAGATACATT TACAGAAGTT TAAAAGATTG CAATGATCAT 14160  
 AGTTTACCTA TTGAATTTCT AAGATTATAC AACGGGCATA TAAACATAGA TTATGGTGAG 14220  
 AATTTAACCA TTCCTGCTAC AGATGCAACT AATAACATTC ATTGGTCTTA TTTACATATA 14280  
 AAATTTGCAG AACCTATTAG CATCTTTGTC TGCATGCTG AATTACCTGT TACAGCCAAT 14340  
 TGGAGTAAAA TTATAATTGA ATGGAGTAAG CATGTAAGAA AGTGCAAGTA CTGTTCTTCT 14400  
 GTAAATAGAT GCATTTTAAT CGCAAATAT CATGCTCAAG ATGATATTGA TTTCAAATTA 14460  
 GATAACATTA CTATATTAAA AACTTACGTG TGCCTAGGTA GCAAGTTAAA AGGATCTGAA 14520  
 GTTTACTTAG TCCTTACAAT AGGCCCTGCA AATATACTTC CTGTTTTTGA TGTTGTGCAA 14580  
 AATGCTAAAT TGATTTTTTC AAGAACTAAA AATTTTATTA TGCCTAAAAA AACTGACAAG 14640  
 GAATCTATCG ATGCAAATAT TAAAAGCTTA ATACCTTTCC TTTGTTACCC TATAACAAAA 14700  
 AAAGGAATTA AGACTTCATT GTCAAAATTG AAGAGTGTAG TTAATGGGGA TATATTATCA 14760  
 TATTCTATAG CTGGACGTAA TGAAGTATTC AGCAACAAGC TTATAAACCA CAAGCATATG 14820  
 AATATCCTAA AATGGCTAGA TCATGTTTTA AATTTTAGAT CAGCTGAACT TAATTACAAT 14880  
 CATTTATACA TGATAGAGTC CACATATCCT TACTTAAGTG AATTGTTAAA TAGTTTAACA 14940  
 ACCAATGAGC TCAAGAAACT GATTAAAAATA ACAGGTAGTG TACTATACAA CCTTCCCAAC 15000  
 GAACAGTAAC TAAAAATATC ATTAACAAGT TTGGTCAAAT TTAGATGCTA ACACATCATT 15060  
 ATATTATAGT TATTAAAAAA TATGCAAACT TTTCAATAAT TTAGCTTACT GATTCCAAAA 15120  
 TTATCATTTT ATTTTAAAGG GGTGAATAA AAGTCTAAAA CTAACAATGA TACATGTGCA 15180  
 TTTACAACAC AACGAGACAT TAGTTTTTGA CACTTTTTTT CTCGT 15225

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 33 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

ACTCAAATAA GTTAATAAAA AATATCCCGG GAT

33

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(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 31 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

CCCGGGATAT TTTTATTAA CTTATTGAG T

31

(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 18 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

GAAAGTATAT ATTATGTT

18

(2) INFORMATION FOR SEQ ID NO:6:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

TATATAAGCA CGATGATATG

20

(2) INFORMATION FOR SEQ ID NO:7:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 16 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

ACTCAAATAA GTTAAT

16

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(2) INFORMATION FOR SEQ ID NO:8:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 14 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

TAACTTATTT GAGT

14

(2) INFORMATION FOR SEQ ID NO:9:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 28 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

GACACAACCC ACAATGATAA TACACCAC

28

(2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 32 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

CATCTCTAAC CAAGGGAGTT AAATTTAAGT GG

32

(2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 27 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

TTAAGGAGAG ATATAAGATA GAAGATG

27

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(2) INFORMATION FOR SEQ ID NO:12:

- (i) SEQUENCE CHARACTERISTICS:  
    (A) LENGTH: 27 base pairs  
    (B) TYPE: nucleic acid  
    (C) STRANDEDNESS: single  
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GTTTTATATT AACTAATGGT GTTAGTG

27

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:  
    (A) LENGTH: 33 base pairs  
    (B) TYPE: nucleic acid  
    (C) STRANDEDNESS: single  
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

TTATAATTGC AGCCATCATA TTCATAGCCT CGG

33

(2) INFORMATION FOR SEQ ID NO:14:

- (i) SEQUENCE CHARACTERISTICS:  
    (A) LENGTH: 30 base pairs  
    (B) TYPE: nucleic acid  
    (C) STRANDEDNESS: single  
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

GTGAAGTTGA GATTACAATT GCCAGAATGG

30

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